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the apparatus used was of improved form originating with the author.

The Reinforcement and Inhibition of the Knee-jerk. H. P. BOWDITCH, M.D. Boston Med. and Surg. Journal, May 31, 1888.

The interesting experiments of which this paper is a preliminary report, had for their object the study of the effect of time upon the reinforcement of the knee-jerk. They start from the well known fact that the knee-jerk is for a time reinforced when preceded by other muscular action. The subject, having taken his position, and been connected with the recording apparatus, at a bell signal, gripped a piece of wood with his right hand. The bell signal was followed at from zero to 1.7 seconds by a regulated blow on the patellar ligament producing the jerk. The experiments were made in courses of about an hour, each embracing several series. Each series was begun by a number of simple knee-jerks, to be used as a basis of comparison with the reinforced ones that followed. The difference between the averages of these parts of a single series was known as the *special* reinforcement; that between the second part of any series and the average of all the first parts of the same course was the *general* reinforcement. In the cut which represents graphically the results of 551 normal and 624 reinforced records on four subjects, the curves for the special and general reinforcements follow nearly the same course. If the hammer stroke was less than 0.4 sec. later than the signal for clenching the hand, the extent of the knee-jerk was increased; if it was more than 0.4 sec. later, the extent was less than normal, till at about 1.7 sec. it again became normal; that is to say, by a clenching of the hand, the spinal centres for the knee-jerk are first excited, then depressed, and then gradually return to their normal condition. Says Professor Bowditch: "We have in this alternating action a phenomenon which cannot fail to throw light upon the nature of 'inhibition,' and [is] destined perhaps, when fully understood, to establish the interference theory on a firm basis."

Ueber die Wahrnehmung der Geräusche. ERNST BRÜCKE. Wien. Sitzb. 3te Abth., XC (1884), pp. 199-230.

On the ground of certain experiments, Exner published the conclusion, in 1876, that we hear tones and noise with the same organs. The present paper is a further study of the same question, made by the author in connection with Profs. Exner and Fleischl. If this conclusion is true, and both are perceived with the same structure of the ear, they should show points of similarity. And such they do, both in common experience (witness the representation of cannon-ading by drum strokes), and in suitable experiments more clearly still. Experiments were begun on explosive noises as the simplest. Having adapted a flame and rotating mirror to the study of such sound waves, the author first tried the report given in forcing a rubber stopper out of lead tubes of various lengths by compressed air, which proved to be a series of waves of decreasing intensity; and later, the explosion of soap-bubbles of hydrogen and air, which gave a solitary wave. Discriminations of high and low could be made with both, corresponding with the length of the tube and the size of the bubble, as should be the case if the noises are heard with